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Botany of the Marysville Buttes.

By Willis L. Jepson.

Almost in the center of the Sacramento Valley and on the level plain between the two great forks of the Sacramento River, the upper Sacramento and the Feather, lie the Marysville Buttes. Entirely isolated from either the Sierra Nevada or the Coast Range, rising abruptly on every side to a considerable elevation from the level plains, these mountains with their ragged summits and sharp slopes form a striking landmark visible from nearly every portion of the northern Sacramento Valley.

I made my way to the Buttes by means of a river steamer. The banks of the stream were fringed with a dense growth of box elder, oak, willow, cottonwood and sycamore, with a thick undergrowth of *Rubus*, *Vitis*, *Sambucus* and *Baccharis*. An occasional break revealed the extensive tule swamps bordering the river for miles, all aglow with great patches of *Cotula*. It was as yet too early to expect much along the river banks and bottoms in the way of annual growths, the winter freshets having only lately receded. But on the plains around Yuba City there was plenty of vegetation and the flora appeared little different from that of the valley sixty miles below; the characteristic spring plants were there in abundance, lupines, clovers, larkspurs, buttercups, *Brodiæas*, *Tritelias*, *Layias*, *Eschscholtzias*, *Allocaryas* and *Orthocarpi*. But the moment I reached the Buttes the flora to all appearances changed entirely.

However, I must not risk generalizations; the vegetable riches of that region are too little known. I spent only one day in Sutter County and barely four hours at the Buttes; but in that time some one hundred and ten species fell into my hands, at least three of which were undescribed. No botanist has to my knowledge ever made a collection to illustrate even partially the flora of this peculiarly isolated compact group of hills. The water expedition of the Wilkes party from San Francisco, of which Dr. Pickering was plant collector, ascended the Sacramento River in August, 1841, and "passed the Prairie Buttes, which are a collection of isolated hills rising from the level plain as if out of the sea." The land expedition of the same party from Oregon encamped at nightfall "after an ineffectual search for water..... in the valley or 'kraal' of the Buttes" and left the next morning. This was October, the dryest season of the year. From this point, Butte Pass, they call it now, I climbed to the summit of the South Peak, nearly two thousand feet above the level of the valley, and two thousand one hundred and twenty-eight above the sea.

The Buttes have at a distance a very barren appearance, and they are in fact but little wooded. The annual growth was, however, everywhere luxuriant, even to the summits of the highest rocky points. The sides of the little cañon which I entered were clothed with dwarfed oak trees, rhamnus and holly bushes and undershrubs. Over the tops of the oaks and other trees clambered the clematis, lighting the whole cañon side with its wonderful profusion of blossoms.

As to whether the affinities of the flora are with the Coast Range or Sierra Nevada can only be determined by more extensive and protracted collecting. My time was perforce too short, and many of the very common things were neglected. Widely introduced plants and native species of extensive geographical range one would naturally expect to find here. About the old settlements on the Feather River, *Marrubium vulgare* grew rankly; on the Sutter Plains *Capsella bursa-pastoris*, *Silene Gallica*, *Achyrachæna mollis*, *Sonchus oleraceus*, were frequent; and at the Buttes, *Sanicula Menziesii*, *Micropus Californicus*, *Rigiopappus leptocladus*, *Hypochæris glabra*, *Malacothrix obtusa*, *Githopsis specularioides*, *Salvia Columbariæ* and *Plantago Pata-*

gonica. A less hasty survey would have undoubtedly yielded more similar plants.

I give below a list of the major portion of the plants of which I obtained specimens, even of many very well known species. My excuse for so doing must be that the flora of this region has been hitherto almost unknown, that nearly one-third of the list have their geographical range extended as given in the State Survey volumes on botany, that many novel and interesting forms were obtained, and that several others have here their second known station recorded.

The collection from the Sutter plains and the Buttes was made on April 20, 1891; that from the Feather River on the day previous.

Clematis lasiantha, Nutt. in Torr. and Gray, Fl. i. 9.

Up to about 900 ft.

Ranunculus Eiseni, Kellogg, Proc. Calif. Acad. vii. 115.

Sufficiently distinguished from *R. Californicus* by its smaller size, hairiness, cuneiform segments of the three-parted radical leaves, and fewer (commonly five) petals. Sutter plains.

Ranunculus hebecarpus, H. and A. Bot. Beechey, 316.

Lower cañon sides, South Peak.

Delphinium variegatum, Torr. and Gray, Fl. i. 32.

Sutter plains.

Delphinium decorum, F. and M. 3rd Ind. Sem. Petr.

Wooded cañons, South Peak.

BERBERIS DICTYOTA. Erect, only six inches high: leaflets commonly five, sometimes only three or four, not crowded, coriaceous, ovate with undulate margins and spinose teeth, one to two and one-fourth inches long, pale green below, bright shining green above, very strongly reticulated on both faces: racemes terminal, clustered, 9-12 lines long: fruit unknown.

The mark of this species as compared with *B. pinnata*, which it mostly resembles, is in its few, coriaceous and strongly reticulated leaflets. These, with the rigid acuminate teeth and undulate margins, give the plant a very spiny appearance. Only one specimen seen and that near the rocky summit of South Peak.

Platystemon Californicus, Benth. Trans. Hort. Soc. 2 ser. i. 405.

Sutter plains. What is probably a dwarfed form only four to six inches high, with erect habit, radical tuft of leaves, and pods never more than one or two seeded, was found at 1500 ft. on South Peak.

Eschscholtzia crocea, Benth. Trans. Hort. Soc. n. ser. i. 406.

The most widely distributed and showy flowered Eschscholtzia of the interior parts of California, and which is common in cultivation as *E. Californica*, is not the plant of Chamisso. The true *E. Californica* belongs to the sand dunes and coast hills of San Francisco and Monterey, and that is where the botanists of the Russian expedition obtained it. The one of the Sacramento and San Joaquin Valleys, which I am now considering, is without doubt the *E. crocea* of Bentham. They are both perennial, but *E. crocea* is different in size, habit, hue of foliage, and color of flowers. Its chief marks are the large size of the orange corolla; the conspicuously spreading scarious torus rim; and the long-conical calyptra, as distinguished from that of *E. Californica*, which is oval and abruptly short-pointed. My specimens from the Buttes agree perfectly with the figure in the Botanical Register, t. 1677.

Eschscholtzia tenuifolia, Hook. Bot. Mag. t. 4812, not of Benth.

Peduncle quadrangular; pod peculiar in the prominence of the ribs. In fruit; only a few of the pale yellow flowers lingering. Willow Branch.

Eschscholtzia hypecoides, Benth. Trans. Hort. Soc. n. ser. i. 407.

A good species and very easily distinguished from the foregoing. That has the leaves all radical, seldom more than half the length of the numerous quadrangular scapes, finely and often sparingly cut into linear divisions; corolla 3-5 lines long, yellow; capsule curved, seeds strongly muricate. This is more strictly erect with terete stems usually simple or 2-3 branched from the base; radical leaves fewer, somewhat leafy stemmed, all mostly twice pinnately cleft or parted into broader divisions, general outline broadly ovate, calyptra ovate-acuminate; petals orange, seven lines long; young capsule straight, mature fruit unknown.

At about 1600 ft. on South Peak.

Erysimum asperum, DC. Syst. ii. 405.

Near the summit of South Peak.

Nasturtium lyratum, Nutt. in T. and G. Fl. i. 73.

Strictly erect; leaves 2-4 inches long, oblong or obovate, irregularly toothed, or with sinuate divisions; silique 6-7 lines long, linear, ob-compressed, on pedicels a line long or less. Doubtfully referred here. A long series of specimens from all parts of the state is needed to define satisfactorily the limits of the species. Star Bend, Feather River; Yuba City.

Tropidocarpum gracile, Hook. Ic. Pl. t. 43.

Valley of the Butte Pass.

Lepidium Menziesii, DC. Syst. ii. 539.

Butte Pass.

Thyanocarpus elegans, F. and M. Ind. Sem. Hort. Petr. p. 51.

Pod four to five lines in diameter. Near the foot of South Peak.

Stellaria nitens, Nutt. in T. and G. Fl. i. 185.

Arenaria Douglasii, (Fenzl.) T. and G. Fl. i. 179.

On South Peak. Not before known north of Auburn and Sonoma.

Arenaria Californica, Brewer in Boland. Catal. 6.

Half-way up South Peak, on a soil composed of triturated sandstone.

Claytonia perfoliata, Donn, in Willd. Sp. ii. 1186.

Foot of South Peak.

Malva parviflora, Linn. Amœn. Acad iii. 416.

Butte Pass, in waste places.

Geranium Carolinianum, Linn. Sp. Pl. ii. 682.

Erodium Botrys, Bertoloni, Amœn. Ital. 35.

Willow Branch.

Rhamnus tomentella, Benth. Pl. Hartw. 303.

Acer Californicum, (T. and G.) Dietr. Syn. ii. 1283.

Recorded only from the Coast Range, along the Feather and Sacramento Rivers.

Cercis occidentalis, Torr. in Gray, Pl. Lindh. 177.

Reduced to a scraggy stiff-stemmed bush. Summit of South Peak.

Vicia Americana, Muhl. in Willd. Sp. iii, 1096.

Astragalus tener, (H. and A.) Gray, Proc. Am. Acad. vi. 206.
Near Yuba City.

Lotus Wrangelianus, F. and M. Ind. Sem. Petr. 16.
Base of South Peak.

Lotus nudiflorus, (Nutt.) Greene, Pitt. ii. 141.
The quadrate seeds with a rather marked notch. Not previously known north of Mt. Diablo; low hills, Butte Pass.

Trifolium gracilentum, Torr. and Gray, Fl. i. 316.
Sutter City.

Trifolium ciliolatum, (Nutt.) Benth. Pl. Hartw. 304.
Sutter City.

Trifolium columbinum, Greene, Pitt. i. 4.
A depauperate form. Sutter plains.

Trifolium variegatum, Nutt. in T. and G. Fl. i. 317.
Base of South Peak.

TRIFOLIUM TRILOBATUM. Annual, a span high, branched from the base and glabrous throughout; lower leaflets finely serrate or occasionally with coarsely toothed summits; upper leaves on peduncles one to two inches long; leaflets spinulose serrate, cuspidate, narrowly rhombic, often abruptly contracted above the middle, and even becoming three lobed; stipules nearly orbicular, with setaceous teeth, but not deeply cleft; involucre irregularly incised with spinulose divisions; calyx tube nearly a line long, with setaceous purple teeth a line and a half long; corolla four to seven lines long, purple with white-tipped banner.

The flowers are large for the slender habit of the plant, which grew in quite a mass by the side of a mountain brook at the base of South Peak.

Trifolium Watsoni, Loja. Giorn. Ital. xv. 186.
Hardly typical. Base of South Peak.

Trifolium microcephalum, Pursh, Fl. ii. 478.
Yuba City.

Trifolium fucatum, Lindl. Bot. Reg. t. 1883.
Sutter plains.

Lupinus micranthus, Dougl. in Bot. Reg. t. 1251.

Lupinus affinis, Agardh, Syn. 20.
Yuba City.

Lupinus albifrons, Benth. in Lindl. Bot. Reg. t. 1642.

Only formerly known from the vicinity of San Francisco and southward. South Peak, 1500 ft.

Lupinus microcarpus, Sims, Bot. Mag. t. 2413.

Sutter City.

Lupinus densiflorus, Benth Trans. Hort. Soc. n. ser. i. 409.

The yellow flowered form. Sutter plains.

Heteromeles arbutifolia, (Ait. f.), M. J. Rœmer, Syn. Monog. iii. 105.

The Buttes.

Rubus vitifolius, Ch. and Schl. in Linnæa, ii. 10.

Harding's Landing. Along the Feather and Sacramento Rivers.

Saxifraga Californica, Greene. Pitt. i. 286.

The Buttes.

Tellima affinis, (Gray) Boland. Catal. 11.

Wooded cañon sides, South Peak.

Tellima scabrella, Greene, Pitt. ii. 162.

Base of South Peak.

Sedum pumilum, Benth. Pl. Hartw. 310.

Gravelly hillside, Willow Branch.

Œnothera strigulosa, (F. and M.) Torr. and Gray. Fl. i. 512.

South Peak.

Œnothera graciliflora, H. and A. Bot. Beechey. 341.

South Peak.

Mentzelia pectinata, Kellogg, Proc. Calif. Acad. iii. 40.

I had described this Mentzelia as new when fortunately my attention was called to a species published twenty-three years ago by Dr. Kellogg. The description is fairly satisfactory and the figure agrees in nearly all respects. The leaves in my plant are not 3-nerved, but strongly 1-nerved. The figure hardly shows the petals as obcordate, although they are so described. The petals in my plant are obcordate, the distinct mucronation showing under a simple lens as a hairy cusp. The stems are dark with a glandular pubescence; leaves hispid. The beauty of the corolla appealed to Dr. Kellogg as always, for he describes it with minuteness: "flowers of a shining golden color, with a lustrous

metallic hue, shading from a deep vivid orange to a burnt carmine center."

On the southern exposure of South Peak at about 1600 ft.—quite plentiful. Most nearly allied to *M. Lindleyi*, but the corolla not nearly so large and the shape of the petals different; the straight capsule only half as broad. My specimens were in good flower and showed no trace of losing the dark glandular indument of the stems. It is a pecularity of the related Californian species that they are of that shining whiteness which gave *M. albicaulis* its name. I have not much doubt that my plant is that of Kellogg. His specimens were from "mountains above Visalia." In any event it seems strange that the species should have been so long ignored in books on Californian botany.

Galium Nuttallii, Gray, Pl. Wright. 80.

Cañons near Butte Pass.

Galium asperrimum, Gray, Pl. Fendl. 60.

Leaves of my specimens uniformly in whorls of five, upper oblanceolate, lower spatulate, all abruptly cuspidate: young fruit densely hispid.

Valerianella congesta, Lindl. Bot. Reg. t. 1094.

Hillsides near South Peak.

Aplopappus linearifolius, DC. Prodr. v. 349.

Never before credited to any portion of California north of Mt. Diablo. At 1500 ft. on South Peak.

ERIGERON CALIFORNICUS. Near *E. divergens* but perennial, branched from the base, ascending, 6-10 inches high, cinereously hirsutulous, leafy up to the base of the peduncles of the scattered heads; radical leaves pinnately parted into five linear segments; cauline narrowly oblanceolate, entire, acutish; heads two or three lines high; rays about 60-75, not very narrow, purplish; pappus of ray and disk alike, of conspicuous squamellæ and very few (four or five) bristles.

Though near *E. divergens*, this is clearly distinguishable by its perennial habit, pinnate radical leaves, and fewer broader rays. On the very edge of the summit of South Peak.

Baccharis viminea, DC. Prodr. v. 400.

Nicolaus, Feather River. The most northern station yet recorded.

Gnaphalium Sprengelii, H. and A. Bot. Beechey, 150.

The Buttes.

Layia platyglossa, Gray, Pl. Fendl. 103.

The Buttes.

Layia Fremontii, Gray, Pl. Fendl. 103.

Sutter plains.

Wyethia helenioides, Nutt. Journ. Philad. Acad. vii. 38.

Hills, Butte Pass. Common around the Bay of San Francisco.

Bæria gracilis, Gray, Proc. Am. Acad. ix. 196.

The paleæ of the pappus too broad to be typical; attenuate into an awn which is not entire. Very likely a new species, but the material too young to determine satisfactorily its position. Low hills near South Peak.

Bæria Fremontii, Gray, l. c.

Base of South Peak.

*AGOSERIS HETEROPHYLLA (Nutt.). *Macrorhynchus heterophyllus*, Nutt. Trans. Am. Phil. Soc. vii. 430.

Low hills near South Peak.

AGOSERIS MAJOR. *Troximon elatum*, Greene, Pitt. i. 71.

Near the preceding but separated on account of its much larger size and expanded head thrice as broad; brownish, not whitish pappus. The name *elatum* is preoccupied by a species of Nuttall under Troximon.

Phlox gracilis, (Hook.) Greene, Pitt. i. 141.

South Peak.

Gilia pusilla, Benth. Bot. Reg. fol. 1622.

South Peak.

Gilia dichotoma, Benth. in DC. Prodr. ix. 314.

At about 1500 ft. Also in Butte Pass.

Gilia ciliata, Benth. Pl. Hartw. 325.

Sides of South Peak.

Gilia achilleæfolia, Benth. Bot. Reg. fol. 1622.

The calyx far less tomentose than in the forms around San Francisco Bay. Butte Pass.

Gilia tricolor, Benth. l. c.

Butte Pass.

**Agoseris*, Raf. Fl. Ludov. 58 (1817) is the earliest name for this genus, the species of which have latterly been referred to *Troximon*.

Nemophila insignis, Dougl. in Benth. Trans. Hort. Soc. n. ser. i. 479.

Valley of the Butte Pass.

Nemophila parviflora, Dougl. in Benth. Trans. Linn. Soc. xvii. 275.

Lower cañon sides, South Peak.

Phacelia tanacetifolia, Benth. in Lindl. Bot. Reg. t. 1696.

Butte Pass.

Amsinckia intermedia, F. and M. Ind. 2. Sem. Petr. 1835. p. 26.

Growing four feet high in the fields and often crowding out all other vegetation. Sutter plains.

Allocarya stipitata, Greene, Pitt. i. 19.

Sutter plains.

Plagiobothrys canescens, Benth. Pl. Hartw. 326.

Low hills. Another plant from 1600 ft. has an erect habit, is only six inches high, and much smaller and narrower fruiting calyx, as distinguished from the other, which has the usual trailing habit and broad flat calyx. I am, however, unable to discern the slightest difference in the nutlets.

Cryptanthe flaccida, (Lehm.) Greene, Pitt. i. 15.

The Buttes.

Solanum umbelliferum, Esch. Mem. Acad. Petrop. x. 281.

An entirely glabrous form marked by its strict habit, paucity of foliage, and rather small pale flowers. On South Peak.

Collinsia bicolor, Benth. Bot. Reg. 1734.

Butte Pass.

Pentstemon corymbosus, Benth. in DC. Prodr. x. 593.

Near the summit of South Peak.

Mimulus guttatus, DC. Cat. Hort. Monsp. 127.

The Sutter plains.

Castilleia parviflora, Bongard, Veg. Sitcha. 158.

On South Peak.

Orthocarpus attenuatus, Gray, Pac. R. Rep. iv. 121.

Low hills near Butte Pass.

Orthocarpus purpurascens, Benth. Scroph. Ind. 13.

Abundant in Butte Pass and frequent on the Sutter plains.

Chenopodium Californicum, Wats. Bot. Calif. ii. 48.

The Buttes.

Umbellularia Californica, Nutt. Sylv. i. 87.
South Peak.

Salix lasiolepis, Benth. Pl. Hartw. 335.
Butte Pass.

Populus Fremontii, Watson, Proc. Am. Acad. x. 350.
Mahon's Landing, Feather River.

Quercus Wislizenii, ADC. Prodr. xvi². 67.
Lower slopes of South Peak.

Quercus dumosa, Nutt. Sylva. i. 7
At about 1000 ft. This is an oak of southern rather than northern California. It has been found as far north in the Coast Range as the vicinity of Clear Lake.

Aristolochia Californica, Torr. Pac. R. Rep. iv. 128.
Summit of South Peak.

Tritelia ixioides (Ait. f.), Greene, Bull. Cal. Acad. ii. 42.
On the slopes of South Peak.

Tritelia laxa, Benth. Trans. Hort. Soc. n. ser. i. 423. t. 15.
Sutter City and the Buttes.

Brodiæa capitata, Benth. Pl. Hartw. 339.
Butte Pass.

On the Citing of Ancient Botanical Authors.

By N. L. Britton.

My review of Professor Greene's "Flora Franciscana" (Bulletin, this volume, pp. 158-160), has been made by him the text of a most scholarly paper in the recent pages of his "Pittonia." His explanations, arguments and criticisms of my remarks are most skillfully drawn, and it is with a feeling that I have but little chance to win in the friendly dispute that I again essay to break a lance with him. However, it is perhaps desirable that I should have another word before my position shall have been rendered entirely untenable.

I have not accused my friend of originality in attributing generic names to the ancient Greeks and Romans. I am well aware of the truth of his statement, that he has not "entered upon course of procedure which has not been taken by learned and famous botanists at one time and another within the last century," even so lately as Baron F. von Mueller's "Second Systematic

Census of Australian Plants," published in the year of grace 1890; and it has been my fortune to meet during the past summer a scholar who must be freely accorded the distinction of being quite as shrewd in perception and as accurate in judgment as any who have preceded him, who holds to the same opinions.

I am led to write this, because Professor Greene has thought it desirable to disclaim the origination of the views he advocates and to refer to what we have had so recently and satisfactorily defined as "authority."

I will first consider his criticisms on my remarks. He takes exception to my statement that "Generic names used by pre-Linnæan authors and adopted by Linnæus are credited to the old writers even as far back as Dioscorides and Pliny," saying that it is true only under important limitations, and showing that he has adopted only those which have been satisfactorily identified. By this I understand him to imply those which he considers to have been satisfactorily identified. Thus he attributes *Cercis* to Linnæus because "the most eminent critics of ancient botany failed to identify *Kerkis;*" and again, "*Lotus* is credited to Tournefort because the ancients had several Loti." And yet my sentence is I think actually true, for I did not say, nor intend to say, that "All generic names used by pre-Linnæan authors and adopted;" etc. But we will not quibble over a word. I might better have said, "many generic names, etc.," and will credit him with a point of vantage.

But I think that he has here touched on a very weak place in his armament, and one that I did not allude to in my review because I realized that I was approaching dangerous ground, and recognized the necessity of keeping some things in reserve. The point that I would make is the undisputed uncertainty of identification of a very large number of ancient names. Not all ancient names, but a great many. There is no preservation of the plants of Dioscorides, Theophrastus or Pliny. Some of them can be known from description, some from ancient engravings, some of them can not be known at all, and between the knowable and the unknowable there is a hazy region which each critical student will interpret differently. Now how in the world are we to attain stability under the system advocated by Prof. Greene, while

such conditions exist? *Per contra*, if we begin to reckon genera from some author, all, or very nearly all, of whose genera may be known by the preserved types, we at once dispel the preceding haze and remove at once a very grave difficulty.

My friend next considers my statement that "The ancients did not use the names in the generic sense of Tournefort, Linnæus and others of about their time, but, in most cases at least, as mere appellations for plants." Inasmuch as he admits "the impossibility that the ancients should have applied names in the generic sense of any generation of modern botanists," the only fact which I wished to emphasize by this sentence, it is hardly worth while to dwell on it longer. There is nothing in it to imply that they never applied names as generic. But his remarks open up the very broad field of research into the history of the evolution of Systematic Botany, which he is so admirably equipped to discuss, and about the details of which I am so ignorant. For, like everything else in the universe, the science has been produced by little and little. I suppose that primitive man, being brought as intimately as he was into contact with the vegetable kingdom, early came to know such plants as were useful to him for food and clothing, and must have had names for them which were transmitted—doubtless with many modifications—from generation to generation. As the faculties of perception became developed, it became evident that there were relationships among the plants, and by a closer and closer study of these relationships the knowledge of the subject has increased to the present. Theophrastus, Pliny and Dioscorides have, I know, been called the "Fathers of Botany," and in its broad sense the title is well given, but to my mind they are very far from being the Fathers of Systematic Botany. But if we consider other branches of human knowledge we find that it has not been found possible to push practical procedure therein back to anything like their beginnings. It has been found necessary to establish by common consent "statutes of limitation," beyond which inquiry and speculation very freely go, but beyond which practical knowledge cannot be reached, and I believe it necessary in our science to establish a statute of limitations at a practical, available point, and this point I believe to be where the writings of some author who proposed

a complete system by means of which plants could be grouped, and whose conclusions may be verified and have been verified by examination of the materials on which his results were based. To the statements that "few or any of the names are likely to be older than the Latin or Greek languages in whose vocabularies they are found," I must therefore take decided exception.

A point of departure such as I have indicated, being then in my opinion a necessity of the case, it will be seen that if my views are to be maintained, this must be found at the writings of either Tournefort or Linnæus, the systems they established being complete in the light of the information they possessed, and their genera practically every one recognizable from their books or herbaria, and even should the latter be destroyed, the knowledge of their genera is so widely diffused that there would never be any uncertainty about them. Tournefort's system is a generation older than that of Linnæus, and if there were no other circumstances to be considered, would have overwhelming claim to the distinction. But there is a very grave difficulty in adopting it, and one which I believe will ever render it unavailable. It is this: It is of the very highest degree of importance that the two sciences of botany and zoology should go hand in hand, and the zoologists can never go back to Tournefort, because he established no animal genera. The versatile Linnæus, however, brought together all Natural History in his Systema Naturæ. He was familiar with plants, animals and minerals. I doubt if it can be satisfactorily maintained that he was more botanist than zoologist. He must have known the whole range of nature better than any other man of whom we have any record. The collections which he brought together were actually immense for his time, and his library was of the richest character. Besides all this, he certainly established the binomial system of nomenclature, and its general acceptance dates from his time, no matter what authors may have used it before. Tournefort did not use it at all, so we cannot go to him for species, another consideration which with me is a strong argument against going to him for genera. And so, as I said in my review of my friend's work, it seems better to me not to go back of Linnæus.

An Enumeration of the Plants collected by Dr. H. H. Rusby in South America, 1885-1886.—XVIII.

(Continued from page 264.)

COMPOSITÆ.

Sparganophorus Vaillantii, Gærtn. Fruct. ii. 396. Falls of Madeira, Brazil (1628).

Vernonia coriacea, Lessing, Linnæa, 1831, 661. Reis, 1,500 ft. (1588).

Vernonia pycnantha, Benth. Yungas, 6,000 ft. (1728). The same as Hartweg, Peru, 754.

Vernonia simplex, Lessing, Linnæa, 1829, 280. Sorata, 13,000 ft. (2669).

Vernonia scabra, Pers. Ench. ii. 404. Reis, 1,500 ft. (1589).

Vernonia mollis, H.B.K. Yungas, 6.000 ft. (1658). The same as Lechler's Peru, 2351.

Vernonia scorpioides, Pers. Ench. ii. 404. Yungas, 6,000 ft. (1704).

VERNONIA SENECIONÆFOLIA, spec. nov. Fruticosa, ramosa, ramulis teretibus plus minusve pubescentibus; foliis petiolatis (petiolus 8–12 mm. longus), ovalis 8–12 cm. longis, utrinque glabris viridibusque, ad apicem acuminatis, basi acutis, margine remote denticulata; capitula pauca, campanulata, multiflora, regulariter corymboso-paniculata, 15–20 mm. lata; involucri squamæ persistentes, 6–8 seriatæ, interiores ligulatæ obtusæ, exteriores breviores, lanceolatæ, acutæ; pappus uniserialis, setis albidisom, minute scabris.

Yungas, 6,000 ft. (1730). Plant with much the aspect of a *Senecio*.

Vernonia laurifolia, DC. Prodr. v. 30 (?). Yungas, 4,000 ft. (1617). Agrees well with the description. I have not seen a named specimen of the species.

Vernonia arborescens, Sw. var. CUNEIFOLIA, var. nov. Folia ad basim cuneata. Reis, 1,500 ft. (2148), apparently differing from the wide-spread tropical American species only in the cuneate bases of the leaves.

VERNONIA BAKERANA, spec. nov. Fruticosa, alte ramosa, dense et minute tomentosa; foliis petiolatis, lanceolatis, utriusque

attenuatis, integris, supra glabris, valde viridibus, subtus dense albo-pubescentibus, 5-7 cm. longis, 10-15 mm. latis; capitulis copiose scorpiodo-paniculatis, sessilibus, late campanulatis, 5-6 mm. latis, 3-4 mm. longis; involucri squamis 4-5 seriatis, interioribus lanceolatis, acutis, exterioribus subulatis; pappi albidi, setis interioribus exteriores 5-6-plo superantibus.

Yungas, 6,000 ft. (2147).

VERNONIA ARISTOSQUAMOSA, spec. nov. Fruticosa, ramosa, ramis teretibus pubescentibus; foliis sessilibus, lanceolatis, coriaceis, integris, acuminatis, 3-6 cm. longis, 10-12 mm. latis, supra glabris, subtus sparse pubescentibus; capitulis sessilibus campanulatis multifloris, 10-15 mm. latis, 10-12 mm. longis, bracteatis, laxe scorpiodo-paniculatis; involucri squamis 4-5-seriatis, exterioribus subulatis, longe aristatis, interioribus lanceolatis, mucronatis; pappi fusci, setis interioribus exteriores 5-6-plo superantibus; acheniis dense pubescentibus.

Yungas, 6,000 ft. (1657). Near *V. muricata*, DC. and *V. aurea*, Mart.

VERNONIA YUNGASENSIS, spec. nov. Fruticosa, ramosa, ramis dense puberulentis; petiolis 10-15 mm. longis; foliis ovatis vel ovato-lanceolatis, denticulatis, longe acuminatis, ad basim rotundatis, supra scabridis, subtus reticulatis, dense griseo-pubescentibus; capitulis campanulatis 6-7 mm. latis, copiose sub-scorpioideo-paniculatis; involulucri squamis 3-4 seriatis, ovatis vel interioribus lanceolatis, obtusis, pubescentibus; pappi albidi setis exterioribus brevissimis, acheniis striatis, glabratis.

Yungas, 4,000 ft. (1731; 1732).

VERNONIA BOLIVIANA, spec. nov. Fruticosa, copiose ramosa, ramis angulatis, glabris; petiolis 6-12 mm. longis; foliis ovatis, coriaceis, utrinque glabris, nitidis viridibusque, integris, acuminatis, ad basim rotundatis, integris, 8-12 cm. longis, 4-5 cm. latis; capitulis campanulatis, paucifloris, copiose sub-scorpioideo-paniculatis; involucri squamis 2-3 seriatis, ovato-oblongis, obtusis, glabris; pappi albidi, setis uniserialibus 3 mm. longis; acheniis striatis.

Yungas, 4,000 ft. (1729). Related to Spruce's No. 4865 from Tarapoto, Peru.

Elephantopus tomentosus, L. Sp. Pl. 814 (*E. mollis*, H.B.K.) Mapiri, 5,000 ft. (1105); Yungas, 6,000 ft. (1106).

Elephantopus angustifolius, Sw. Prodr. 115. Guanai, 2,000 ft. (1591).

Elephantopus spicatus, B. Juss. in Aubl. Guian. 808. Mapiri, 5,000 ft. (1109).

Adenostemma triangulare, DC. Prodr. v. 113. Mapiri, 5,000 ft. (1673).

Ageratum conyzoides, L. Sp. Pl. 1175. Mapiri, 5,000 ft. (1643).

Stevia Boliviensis, Sch. Bip. Bull. Soc. Bot. France, xii. 81, name only. Yungas, 4,000 ft. (1614); Unduavi, 8,000 ft. (1615). The same as Mandon's 242, Herb. Kew.

Stevia compacta, Benth. Pl. Hartw. 191. Near La Paz, 11,000 ft. (1613).

Eupatorium squalidum, DC. Prodr. v. 142. Mapiri, 5,000 ft. (1622).

Eupatorium conyzoides, Vahl., Symb. iii. 96. Sorata, 8,000 ft. (1624); Guanai, 2,000 ft. (1621).

Eupatorium conyzoides, Vahl. var. *incanum*, Baker in Mart. Fl. Bras. vi. Pars. II. 278 (*E. Clematitis*, DC. var. *tomentosum*, Sch. Bip. Bull. Soc. Bot. France, xii. 81, name only). Yungas, 4,000 ft. (1625); Sorata, 8,000 ft. (1626).

Eupatorium scabrum, L. f. Suppl. 354. Guanai, 2,000 ft. (1623).

Eupatorium extensum, Gardn. in Hook. Lond. Journ. Bot. vi. 440, ex descr. Guanai, 2,000 ft. (1627).

Eupatorium iresinoides, H.B.K. Nov. Gen. iv. 106, t. 340. Near La Paz, 10,000 ft. (1637).

EUPATORIUM GUANAIENSE, spec. nov. § Osmia. Suffruticosum, erectum, 5-7 dm. altum, ramosum; caule ramisque pilosis; foliis sessilibus, lanceolatis, acutis vel acuminatis, coriaceis, integris, trinervis, utrinque viridis, supra scabris, subtus hispidis; capitulis cylindrico-campanulatis, 8-10 mm. longis, multifloris; squamis 3-4 seriatis, linearibus, obtusis vel truncatis, glabris, trinervis; pappi setis griseis; acheniis 2 mm. longis, linearibus, costatis, glabris.

Guanai, 2,000 ft. (1735). Related to *E. verbenaceum*, Mart.

Eupatorium Vauthierianum, DC. Prodr. v. 159. Beni River (2126).

Eupatorium Guadalupense, Spreng. Syst. Veg. iii. 414. Yungas, 6,000 ft. (1609); Guanai, 2,000 ft. (1603; 1606). Same as Holton's 319, New Granada.

Eupatorium steviæfolium, DC. Prodr. v. 158. Junction of the rivers Beni and Madre de Dios (1656).

Eupatorium Sternbergianum, DC. Prodr. v. 167. Yungas, 6,000 ft. (1608); Guanai, 2,000 ft. (2719). The same as Mandon's 252, so determined by Schultz.

Eupatorium kleinioides, H.B.K. Nov. Gen. iv. 120. Guanai, 2,000 ft. (1734).

Eupatorium macrophyllum, L. Sp. Pl. 1175. Yungas, 6,000 ft. (1610); Mapiri, 2,500 ft. (2125); junction of the rivers Beni and Madre de Dios (1605) (*E. populifolium*, Mart).

Eupatorium inulæfolium, H.B.K. Nov. Gen. iv. 109. Yungas, 4,000 ft. (1607).

Eupatorium glomeratum, DC. Prodr. v. 154. Yungas, 4,000 ft. Same as Mandon's 256.

EUPATORIUM RUSBYI, spec. nov. § Conoclinium. Suffruticosum, erectum, ramis pubescentibus; foliis oppositis, ovato-lanceolatis, acuminatis, in petiolum late marginatum attenuatis, utrinque viridis et scabro-pubescentibus, membranaceis, acute dentatis, 10-15 cm. longis, 3-4 cm. latis; capitulis numerosis pedicellatis corymboso-paniculatis, campanulatis, multifloris, 5-6 mm. latis; involucri squamis linearibus, obtusis; pappi setis albis, tenuibus; involucro hemispherico, nudo, papilloso.

Mapiri, 2,500 ft. (2723).

Eupatorium amygdalinum, Lam. Encycl. ii. 408. Yungas, 4,000 ft. (1635); 6,000 ft. (1636).

Eupatorium glechonophyllum, Less. Linnæa, 1831, 105. Near Valparaiso, Chili (1604).

Eupatorium Salvia, Colla. Pl. Chil. 8, f. 2. Near Valparaiso, Chili (2514).

Eupatorium heptanthum, Sch. Bip. Bull. Soc. Bot. France, xii. 82, name only. Near La Paz, 10,000 ft. (1733). The same as Mandon's 260. Closely related to if not identical with *E. Azangaroense*, Sch. Bip., based on Lechler's No. 1776 from Peru.

Eupatorium hecatanthum (DC.), Baker in Mart. Fl. Bras. vi., Pars. ii. 365. Yungas, 6,000 ft. (2127). The same as Mandon's 262, so determined by Schultz, but differing somewhat from Baker's description.

Notes on New England Marine Algæ. V.

By Frank S. Collins.

Pleurocapsa fuliginosa, Hauck. This species I have found at Marblehead, Mass., forming a very thin reddish or brownish-black coating on rocks near high water mark ; probably it is to be found at similar stations elsewhere, as it occurs in most parts of Europe. The cells, which are from .005 to .02 mm. diam., are usually reddish-brown, but sometimes golden-brown or dull violet ; they are often united in twos, fours, or larger numbers, due to the repeated cell division in all directions ; when the cells cease to divide, the contents change into small round spores. The species is described and figured in Hauck, Deutschlands Meeresalgen, p. 515, fig. 231.

Dermocarpa Schousbœi (Thuret) Bornet. This species I have found at Nahant, Mass., growing on *Rhodochorton Rothii* and *Rhizoclonium riparium ;* it is likely to be found also on other filamentous algæ. The genus *Dermocarpa* differs from *Pleurocapsa* in that the cells of the former do not divide, and therefore are not found united in twos, fours, etc., but though often closely packed, remain individually distinct, each attached to the host plant. In *D. Schousbœi* they are spherical or flattened by mutual compression, and the color is light bluish-green. Figured and described, as *Xenococcus Schousbœi*, in Bornet and Thuret, Notes Algologiques, p. 73, Tab. xxvi.

Dermocarpa prasina (Reinsch) Bornet. Grows quite abundantly in spring on the New England coast, on the older part of the fronds of *Polysiphonia fastigiata*. It is easily distinguished from the preceding species, the cells being cylindrical or club-shaped, .015-.03 × .005-.02 mm., of a deep blue-green color. They are closely packed, forming cushion-like expansions. Reinsch described and figured in Contributiones ad Algologiam et Fungologiam, a number of species of *Sphænosiphon*, a genus which must give place to the older *Dermocarpa;* most of his species it would be practically impossible to distinguish. I do not think our plant can be separated from *D. prasina*, which occurs commonly in Europe on *Catenella opuntia*, and is figured and described in Bornet and Thuret, Notes Algologiques, p. 73, Tab. xxvi.

Goniotrichum ramosum (Thwaites) Hauck. This differs from *G. elegans* (Chauvin) Zan., by having cells which are green in color and longer than broad, instead of reddish, and as long as broad or shorter; they measure .005-.008 × .008-.02 mm. I I found it at Quincy, Mass., in small quantity among other algæ. Described in Hauck, Meeresalgen Deutschlands, p. 519.

Calothrix Contarenii (Zan.) Born. and Fl. The filaments of this species considerably resemble those of *C. scopulorum*, but they are thinner and straighter, and so erect and closely packed as to resemble those of an *Isactis*. The surface of the frond also resembles *Isactis*, being dark green and smooth, thus easily distinguishing it from *C. pulvinata*, which is equally densely packed, but has a spongy surface. I have found it at Revere Beach, Mass., growing in January and February a little above low water mark, on stones more or less imbedded in the sand.

Calothrix æruginea (Kütz.) Thuret. A species considerably resembling *C. crustacea* in color and habit, but smaller (filaments .009-.01, rarely .012 mm. diam.) and with fewer heterocysts. I found it at Cape Rosier, Maine, July, 1890, growing sparingly on fronds of *Enteromorpha*, *Cladophora*, etc., in a warm upper tide pool. Figured and described in Bornet and Thuret, Notes Algologiques p. 157, Tab. xxxvii.

Calothrix fasciculata, Ag. The chief distinguishing character of this species is the branching, which in mature plants takes the form of more or less dense, usually secund tufts, near the end of the filaments. I found it at Cape Rosier, Maine, in July, 1889, growing on rocks between tide marks.

Enteromorpha micrococca, Kütz. A small species, externally resembling a stunted form of *E. intestinalis*, but microscopically distinguished by irregularly placed, very small cells (.004-.005 mm. diam.), arranged in no particular order, and by the relatively thick (.018-.02 mm.) cell wall. I found the plant at Mount Desert Island, Maine, in July, 1890, growing on exposed rocks near high water mark, in places where fresh water was running down. It is figured and described in Kützing, Tabulæ Phycologicæ, vol. vi, p. 11, Tab. xxx.

Ulothrix implexa, Kütz. In making collections in the rather brackish water of the Mystic River, at Medford, Mass., in

May, 1887, I found the woodwork of the wharves covered with a coating of algæ, which when examined under the microscope consisted of a bewildering confusion of forms; all of which, however, could be placed under the known species of our coast except one, which I venture to identify as above, on the faith of the description and figure in Hauck, Deutschlands Meeresalgen, fig. 193, and a specimen from the Adriatic, which I owe to Dr. Hauck. The plant is characterised by the rather thin cell wall, the cells rather shorter than their diameter, which is .01-.014 mm., and by the more or less distinct chlorophyll ring in each cell. The color is a yellowish green. I have since found the same species growing near high water mark, on rocky shores at Marblehead and Nahant.

Halothrix lumbricalis (Kütz.) Reinke. I first found this plant at Cohasset, Mass., in May, 1885; it grew in company with *Castagnea*, *Punctaria*, and other spring algæ, on floating leaves of *Zostera marina*. Two or three years later I found it similarly at Revere Beach, Mass., and this spring, 1891, I have found it at the latter locality, growing luxuriantly and abundantly on the *Zostera* which grows near low water mark; it has also been found at Bridgeport, Conn., by Mr. Isaac Holden. It forms a dense fringe, from 3 mm. to 2 cm. in height, and is often hidden from casual observation by other and larger algæ growing with it. The species was first figured and described by Kützing as *Ectocarpus lumbricalis*, the fructification having some external resemblance to that of the subgenus *Pylaiella* of *Ectocarpus*; Hauck transferred it to *Elachista*, which it resembles in its unbranched sterile filaments; Reinke has recently created a new genus for it, as a result of his studies of its structure and development, which he has published in Algenflora der Westlichen Ostsee, Deutsches Antheils, p. 49. He has given very complete figures in the Atlas Deutscher Meesesalgen, Tab. I.

Ectocarpus Mitchellæ, Harv. This species was described and figured by Harvey in the first part of the Nereis Boreali-Americana, published in 1852. His specimens were collected by Miss A. Mitchell of Nantucket, for whom he named it; since that time nothing had been heard of it, and the species was beginning to be regarded as rather apocryphal. Among some algæ recently

sent me by Miss Laura Jernegan of Edgartown, Mass., I found an *Ectocarpus*, collected by her at Edgartown, which I have little doubt belongs to the long lost species. It is a delicate plant, considerably resembling in color and habit *E. confervoides*, var. *siliculosus*, but the branching is more patent, especially at the tips, where the ramuli are quite densely set, something like *E. fasciculatus*, except that in *E. Mitchellæ* they are more divaricate. The plurilocular sporangia are quite distinct from any other of our species, being elliptic oblong or almost cylindrical, quite sessile, and obtuse, arranged in series on the upper side of the branches. It is, however, not improbable that it may be identical with *E. virescens*, Thuret ; but in that case Thuret's name would have to give way to Harvey's, which has the priority. *E. Sandrianus*, Zan., is nearly allied, but as far as I can judge from figures and herbarium specimens, the two are distinct.

Pylaiella littoralis (L.) Kjellm., var. *fluviatilis*, Hauck. The species is very common and variable, but I have only once met with this variety, which I found in a ditch in Mystic River marshes, Mass. It is softer and more delicate than the type, and is characterized by the very long plurilocular sporangia, little if any wider than the branches on which they grow. In my specimens they sometimes reach a length of a millimeter, and are often terminal, in that case reminding one of *Ectocarpus confervoides*. It is not impossible that *E. longifructus*, Harv. may be properly referred to this variety.

Ascocyclus globosus, Reinke. The genus *Ascocyclus* has been separated by Magnus from *Myrionema*, on account of the formation of the sporangia from the terminal cells of the upright filaments or from their branches, while in *Myrionema* they are borne directly on the basal layer. In *A. globosus* they are formed by transformation of the branches. Colorless jointed hairs, rather larger than the upright filaments, are distributed among the latter, rising from the basal layer. This is one of the larger species of the genus, and forms hemispherical or spherical tufts, large enough to be visible to the naked eye, on various filiform algæ. I have found it at Nahant, Mass., on old fronds of *Chætomorpha Melagonium*. Described in Reinke, Algenflora, etc., p. 46, and figured in the Atlas, Tab. xvii.

Ascocyclus Balticus, Reinke. This species I have found growing on the tips of the fronds of *Laminaria digitata*, at Marblehead, Mass. It is a smaller species than the preceding, forming dots about the size of those of *Myrionema*. The basal layer produces colorless hairs, and erect simple filaments, the upper cells of which are transformed into sporangia, the lower cells remaining unchanged. Described in Reinke, Algenflora, p. 45, and figured in the Atlas, Tab. xv.

Beside the two species just mentioned, the genus *Ascocyclus* will contain one other American species, *A. orbicularis* (J. Ag.) Magnus, (*Myrionema orbiculare*, J. Ag.)

Elachista lubrica, Rupr. Our common *Elachista*, *E. fucicola* (Velley) Fries, varies considerably in appearance, especially on the coast of Maine, where it occurs not only on a number of different species of algæ, but also on woodwork; in July, 1888, I found at St. George's Bay, Maine, an *Elachista* growing rather plentifully on *Halosaccion ramentaceum*, the usual habitat of *E. lubrica*. Dr. F. R. Kjellman, to whom I submitted the various forms of this genus which I had collected, does not consider the plant on *Halosaccion* distinct from our common species, but pronounces a form growing on *Polysiphonia fastigiata* to be the true, arctic *E. lubrica*. It is somewhat softer and paler than *E. fucicola*, and the free filaments are abruptly wedge-shaped at the base, somewhat tapering to the apex; the cells in the basal part one-half to one-third their diameter; the unilocular sporangia longer and narrower than in *E. fucicola*.

Elachista stellaris, var. *Chordæ*, Aresch. A small plant, hardly visible to the naked eye, which I have found once only, when it grew on *Stilophora rhizodes*, collected at Falmouth Mass., in September. The type, which is considerably larger, has not yet been found here, but should be looked for on *Arthrocladia villosa*, on which it occurs in Europe. The variety is sufficiently distinguished from any other of our species by its small size, filaments largest near the base and tapering to the apex, and by the ellipsoid-pyriform sporangia. Figured and described in Areschong, Observationes, Part III. p. 18. Tab. II.

Phuyllophora Traillii, Holmes. This minute species grows on exposed rocky shores, in clefts and "runways" in the rocks.

The fronds seldom reach a height of 15 millimeters, and consist of a terete stipe, sometimes forking, and ending in a rather narrow lamina, simple or once divided; along the margins of the lamina are often numerous ciliæ, in which the cystocarps are formed, usually in the winter months. The color is a bright red, and the fronds usually grow in rather dense patches. I have found it from Cohasset, Mass., to Penobscot Bay, Maine. It is figured and described in Batters' List of the Marine Algæ of Berwick-on-Tweed, p. 114, Tab. xi.

Gymnogongrus Griffithsiæ (Turn.) Martius. I found this plant in September, 1886, forming densely matted tufts scarcely two centimeters high on small pebbles just below low water mark, in an arm of the sea known as the "Salt Pond", Eastham, Mass. It grew in company with *Gelidium crinale*, which it considerably resembles in habit, though easily distinguished on closer examination by its irregular branching. The nemathecia were abundant, forming small wart-like swellings on the branches, mostly at the axils.

In addition to the above mentioned, which I have myself found, the two following species have been found by Dr. W. A. Setchell.

Entocladia Wittrockii, Wille, a plant consisting of slender, irregularly branching green filaments, living in the cell walls of various filamentous algæ, which are more or less distorted by it. The cells are about .009 mm. diam., the end cells slenderer and quite long. Zoospores are formed in single, more or less swollen cells. Dr. Setchell has found it at several points on the coast, and it is probably not uncommon. Figured in Hauck, Deutschlands Meeresalgen, fig. 199.

Pringsheimia scutata, Reinke, a curious green alga forming disk-like expansions on algæ, etc., reminding one somewhat of the fresh water genus *Coleochæte*. The resemblance, however, is merely superficial, the elaborate sexual fructification of *Coleochæte* being entirely wanting, reproduction taking place either by non-copulating macrozoospores, or by copulating microzoospores, the two forms being produced on separate plants. It is described in Reinke, Algenflora, etc., p. 81, and figured in the

Atlas, Tab. xxv., and was found by Dr. Setchell at Waquoit Bay, Mass., on *Zostera marina*.

The above mentioned species and varities, with the exception of *Ectocarpus Mitchellæ*, have never, so far as I know, been reported from the American coast; and as the published descriptions are almost in all foreign languages, and in works not generally accessible, I have added comments which I hope will enable students to recognize them. In the Flora of Middlesex County, Mass., by L. L. Dame and F. S. Collins, I mentioned two other species new to this country, *Monostroma Vahlii*, J. Ag., and *M. latissimum* (Kütz.) Wittr. The locality where the former was found having been destroyed, it is to be hoped some other will be found for it; the latter seems to be not uncommon in marshes near Boston, and has also been found at Bridgeport, Conn., by Mr Isaac Holden. In both places it seems to pass into *M. quaternarium* (Kütz.) Desm.; possibly the two are not distinct species.

Some Plants of Western Pennsylvania.

By Adolph Koenig, M.D.

The following named plants were observed in flower during a halfday's botanical excursion in a narrow valley and adjacent hill-sides, near Wildwood, on the Pittsburg and Western R. R., about fourteen miles north of Pittsburg, July 2nd, 1891.

Anemone Pennsylvanica, L. Rare.
Anemone Virginiana, L. Rather common.
Thalictrum polygamum, Muhl. Common.
Ranunculus acris, L. Common.
Cimicifuga racemosa, (L.) Nutt. Very abundant.
Nasturtium palustre (L.) DC. Apparently the typical form. In waste ground.
Brassica nigra (L.) Koch. Common.
Barbarea vulgaris, R. Br. Common.
Brassica campestris, L. In neglected fields.
Viola sagittata, Ait. Not rare. Inflorescence cleistogamous.
Lychnis Githago (L.) Lam. One specimen only. In open woods, near railroad.
Stellaria longifolia, Muhl. Common.

Hypericum perforatum, L. Common.
Impatiens aurea, Muhl. Just coming into flower. Common.
Ceanothus Americanus, L. Very plentiful.
Medicago lupulina, L. Along the railroad. Not rare.
Spiræa Aruncus, L. Almost past flowering. Common.
Physocarpus opulifolius (L.) Maxim. Mostly in fruit. Not rare.
Gillenia trifoliata (L.) Mœnch. Rather common.
Rubus odoratus, L. Common.
Rubus villosus, Ait. Very common.
Rubus hispidus, L. Rare in this county.
Geum album, Gmelin. Common.
Potentilla Norvegica, L. Common.
Rosa humilis, Marsh., var. *lucida* (Ehrh.) Best. Common.
Heuchera Americana, L. Mostly in fruit. Common.
Hydrangea arborescens, L. Common.
Œnothera fruticosa, L. Common.
Heracleum lanatum, Michx. Not rare. Mostly in fruit.
Cryptotænia Canadensis (L.) DC. Very common.
Cicuta maculata, L. Common.
Cornus sericea, L. Common.
Erigeron annuus (L.) Pers. Common.
Erigeron ramosus (Walt.) B.S.P. Common.
Heliopsis helianthoides (L.) B.S.P. Common.
Rudbeckia hirta, L. Common.
Cacalia reniformis, Muhl. Rather common.
Hieracium venosum, L. Common.
Lactuca Canadensis, L. Common.
Valerianella radiata, Dufr. Not common. Mostly in fruit.
Lobelia spicata, Lam. Very abundant in fields and open woods.
Kalmia latifolia, L. Almost out of flower. Abundant.
Lysimachia quadrifolia, L. Very common.
Steironema ciliatum (L.) Raf. Rather common.
Apocynum androsæmifolium, L. Less common that cannabinum.
Asclepias Syriaca, L. Common.
Asclepias incarnata, L. Common.
Asclepias exaltata (L.) Muhl. Less common.
Myosotis laxa, Lehm. Not common, but abundant in a dense bed in one locality at this station.

Convolvulus sepium, L. Common.
Verbascum Thapsus, L. Common.
Verbascum Blattaria, L. Common.
Scrophularia nodosa, L., var. *Marilandica* (L.) Gray. Common.
Penstemon lævigatus, Solander, var. *Digitalis* (Nutt.) Gray. Rather rare.
Veronica officinalis, L. Common.
Leonurus Cardiaca, L. Common.
Dianthera Americana, L. Common.
Blephilia ciliata (L.) Raf. Common.
Euphorbia corollata, L. Common.
Sisyrinchium anceps, Cav. Common.
Dioscorea villosa, L. Common.
Lilium Canadense, L. Not rare in this locality, but rare elsewhere.
Stenanthium robustum, Watson. Rare; the only station known to the writer. Not quite in flower.
Tradescantia Virginica, L. Common in this locality but not elsewhere in the county.
Smilax rotundifolia, L. Common.
Polygonatum commutatum (Schult.) Dietrich. Mostly in fruit. Not very common.
Sparganium androcladum (Engelm.) Morong. Common.

In addition to these the following species were also observed, not, however, in flower. They are of interest because of their comparative rarity in this neighborhood.

Arisæma Dracontium (L.) Schott. Very rare.
Rhus copallina, L. Rare, but plentiful at this station.
Acer spicatum, Lam. Rare.
Taxus Canadensis, Willd. Rare in this county.
Humulus Lupulus, L. Well established along the creek and its tributaries.

July 9th, the following species were seen in flower in the same locality:

Hieracium scabrum, Michx. Less common than venosum.
Pyrola rotundifolia, L. Not rare.
Galium pilosum, Ait. Not very common.
Monarda didyma, L. Not rare.
Waldsteinia fragarioides (Michx.) Tratt. Not common.

Chimaphila maculata (L.) Pursh. Not rare.
Stachys palustris, L. Not common.
Blephilia hirsuta (Pursh.) Benth. Not rare.
Œnothera biennis, L. Very common.
Mimulus alatus, Ait. Not rare.
Rhus glabra, L. Common.
Hypericum prolificum, L. Just coming into flower. Not common.
Phryma Leptostachya, L. Rather common.
Circæa Lutetiana, L. Common.
Pycnanthemum incanum, Michx. Not rare; just coming into flower.
Campanula Americana, L. Common.
Asclepias tuberosa, L. Rare.
Penthorum sedoides, L. Common.
Silphium trifoliatum, L. Rare.

Reviews of Foreign Literature.

Iconographia Floræ Japonicæ or Descriptions with Figures of Plants Indigenous to Japan. By Ryokichi Yatabe (Vol. 1. Part 1. 66 pp., large 8vo. 20 Plates, Tokyo, 1891).

This work, of which we have here the pleasure of announcing the first part, is the most important contribution yet made to the knowledge of Japansese plants. The author states in his prefatory note: "As there exists no book containing the figures and descriptions of all the plants known to be indigenous to Japan, I intend, in the following pages, to supply this want. Although some friends of mine have promised their contributions, it will, nevertheless, require a number of years to complete the work. The specimens to be figured will be chiefly obtained from the Botanic Garden and Herbarium of the Imperial University, and will include both Phanerogamic and Cryptogamic plants. The figures will serve, moreover, as illustrations to a compendious flora of Japan for the use of students, which I am now preparing." The descriptions are given in detail in both English and Japanese. The illustrations are beautiful outline drawings, showing the habit of the plants, and their floral and fruit structure. Many of the species recently first described in the Bulletin of the Tokyo's Botanical Society are here figured. N. L. B.

Index to Recent Literature Relating to American Botany.

Address on the Fungous Diseases of Plants, Delivered at the 16th Annual Meeting of the East Tennessee Farmers' Convention, held at Knoxville, May 19th and 20th, 1891. F. Lamson-Scribner. (Pamph. pp. 31, Nashville, 1891).

Aster Shortii. (Gar. and For. iv. 472, 473, f. 74).

Biolettia—A new Genus of Compositæ. Edward L. Greene, (Pittonia, ii. 215, 216).

Description of a new genus with one species, *B. riparia*, from banks of the lower San Joaquin River, Cal. The plant has the aspect of an *Erigeron*, but the fruit characters of the Helenioidæ. It is dedicated to the discoverer, Mr. F. T. Bioletti.

Bocconia. H. H. Rusby. (Reprint from Bull. Pharm., Aug., 1891).

The author describes the discovery of the medical properties of the genus. *B. cordata, B. frutescens* and *B. arborea* are figured.

Botanical Nomenclature—A New Departure in. Edward L. Greene. (Pittonia, ii. 213-215).

Argument against the use of specific names identical with generic.

Bulletin No. 23, *Kansas State Agricultural College. Botanical Department.* W. A. Kellerman. (Pamph. 8vo. pp. 10, three Plates).

This Bulletin is concerned with the smuts of sorghum and corn. *Ustilago Sorghi* and *U. Reiliana* are subjects of illustration.

Chia. Edward Palmer. (Zoë, ii. 140-142).

The title of this paper is the term used to denote the meal prepared in Mexico from the seeds of several species of *Salvia.*

Cola Nut or Bissy. (Bull. Bot. Dept. Jamaica, No. 23).

Describes the economic value of *Cola acuminata.*

Common Shrubs of Southwest Colorado—The. Alice Eastwood. Zoë, ii. 102-104).

Contributions to the Knowledge of West American Plants. I. Katherine Brandegee. (Zoë, ii. 75-83, Pl. xiii).

Varied criticisms upon other authors, and notes on a number of plants. *Boschniakia strobilacea* is figured.

Cypripedium Californicum. J. H. Hooker. (Bot. Mag. t. 7188)

Diseases of the Orange in Florida. L. M. Underwood. (Journ. Mycol. vii. 27-36).

Elodea Canadensis in Russland.—Ein neue Beitrag zur Verbreitung der. F. von Herder. (Bot. Centralb. xlvii. 295).

Note relative to the continual further distribution of this North American species in Russia.

Exostemma Caribæum, R. and S., Probably the "Quina" of the Province of Michoacan, Mexico. (El Estudio, [Mexico.], Tom. iv. No 1).

Ferns of Tamalpais. Mary E. Parsons. (Zoë, ii. 129-131).

Ferns of the Wisconsin Dells. (Am. Gard. xii. 559, 560).

Field Notes on the Plants of Baja California. T. S. Brandegee. (Zoe, ii. 145-152).

Fertilization of Geraniums—The. Alice Eastwood. (Zoë. ii. 112).

A memorandum of facts tending to show cross-fertilization amongst the native *Geraniums* of Colorado.

Flora of Yo Semite—The. Katherine Brandegee. (Zoë. ii. 153-167).

Notes upon specimens collected by members of the California Botanical Club.

Foreigner—A Vigorous. C. M. Weed. (Am. Gard. xii. 620, illustrated).

Under this title is a description and representation of *Lactuca Scariola,* which seems to be causing some apprehension in certain parts of Ohio.

Fossil Remains Considered as Peculiar Kinds of Marine Plants—Remarks on. Leo Lesquereux. (Proc. U. S. Nat. Mus. xiii. 5-12., Pl. i.)

This paper will afford fresh material for discussion by those who are interested in the so-called "problematic organisms."—*Halymenites Herzeri, Cylinderites striatus* and *Physophycus bilobatus* are described and figured as new.

Francoa ramosa. (Gard. xl. 241, illustrated).

Golden Rods. H. H. Rusby. (Pharm. Rec. xii. 223, 224).

A popular description of *Solidago* with an incidental plea for it as the national flower.

Hemlock and Parsley. W. W. Bailey. (Am. Nat. xxv. 784-786).

A general discussion of the poisonous properties of *Cicuta* and *Æthusa*, with incidental reference to other Umbelliferæ.

History of Garden Vegetables—The. E. S. Sturdevant. (Am. Nat. xxv. 801-806).

Tomato, (*Lycopersicum sp.*) and Turnips, (*Brassica sp.*) are described.

Ilices—Ueber die Benennung Zweier Nordamerikanischer. Th. Loesener. (Bot. Centr. xlvii. 161-163).

Herr. Loesener discusses the names which should be applied to the Dahoon Holly and the Cassena. He concludes that the Dahoon should be called *Ilex Cassine*, L., and inasmuch as *Cassine Caroliniana*, Lam. (1783) is the earliest name certainly associated with the Cassena this should be known as *Ilex Caroliniana* (Lam.), Loes. He makes no allusion to Prof. Sargent's careful study on this point, the results of which are published in Garden and Forest, ii. 616, and Silva N. A. i. 111, and we presume that he is ignorant of them. Prof. Sargent shows that as Miller published *Ilex Caroliniana* in 1768 for the Dahoon that binomial is not available for the Cassena, which must bear the name *I. vomitoria*, Ait.

Index to North American Mycological Literature. D. G. Fairchild. (Journ. Mycol. vii. 52-63).

Isoetes—Contributions to the Life History of. Douglass H. Campbell. (Annals of Bot. v. 231-256, three plates).

An exhaustive research into the development of *I. echinospora* var. *Braunii.*

Jeffrey's Pine. (Gard. and For. iv. 457, 458, f. 73).

General description of *Pinus Jeffreyi* and its habitats.

List of Mosses Collected by T. S. Brandegee in the Yakima Region of Washington, 1882-3. (Zoë, ii. 106, 108).

A list of thirty-nine species determined by L. M. Underwood and O. F. Cook.

List of Plants Collected by Dr. F. Altimirano in an Expedition to the Vicinity of Patzcuaro, Mexico, in December, 1891. (El Estudio, [Mexico], Tom. iv. Num. 2).

Lobelia laxiflora, H. B. K., var. angustifolia, DC. Dr. Jose. Ramirez. (El Estudio, [Mexico] Tom. iv. Num. 1).

The pharmacognostical characters of the root of this plant are compared with those of *L. fenestralis.* Two handsome full page cuts illustrate the paper.

Lobelia laxiflora, H. B. K., var. angustifolia, DC.—Notes for a study of its physiological and therapeutical action. Dr. Fernando Altamarino, (Loc. cit.).

Mock Oranges—The. (Gard. xl. 288, 289, illustrated).

Philadelphus grandiflorus is figured in the text, and *P. microphyllus* is the subject of a colored plate.

Musci Exotici Novi vel minus cogniti. F. Renauld et J. Cardot. dot. (Bull. Soc. Bot. Belg. xxix. pp. 161-186).

The following American species are described as new:—*Hyophila Martinicæ* from Martinique, *Bartramia radicalis*, var. *plumulosa*, *Philonotis Haitensis*, from Hayti; *Brachymenium Bordazii*, Martinique; *Pilotrichella cuspidans*, Hayti; *Neckera porodictyon*, Hayti, *Porotrichum Bertrandi*, Hayti; *Raphidostegium Barnesi*, Mexico; C. G. Pringle; *Trichostelcum pleuripunctatum*, Martinique.

Musci Novi Guadalupensis, E. Bescherelle. (Rev. Bryol. xviii. 75-77. 1891.)

Five new species in the genera *Splachnobryum, Syrrhopodon* and *Distichophyllum* are described.

New or Note-worthy Species, XI. Edward L. Greene. (Pittonia, ii. 216-218.)

Œnothera depressa, Godetia pulcherrima, Madia hispida and *Pentstemon Sonomensis* are described as new.

New Pine Leaf Rust—A. B. T. Galloway. (Journ. Mycol. vii. 44). *Coleosporium pini* is described as new.

New Species of Fungi from North and South America—Observations on. G. Lagerheim. (Journ. Mycol. vii. 44-52, Pl. X.)

Peronosphora gonolobi, Doassansia gossypii, Uredo gossypii and *Puccinia heterogenea* are described as new—the latter one figured.

New Species of Uredineæ. J. B. Ellis and S. M. Tracy. (Journ. Mycol. vii. 43).

Puccinia hemizoniæ, Æcidium oldenlandianum and *Æ. Malvastri* are described as new.

Northern Plants in Pennsylvania. W. A. Buckhout. (Gard. and For. iv. 447, 448).

Notes on Introduced Plants of Santa Clara. B. F. Leeds. (Zoë, ii. 124-128).

Notes on some Uredinæ of the United States. P. Dietel. (Journ. Mycol. vii. 42, 43).

Notes on the Flora of Canada. J. M. Macoun. (Bot. Gaz. xvi. 285-288).

A list of fifty-one species considered worthy of note, including twenty-two new to Canada.

Notholæna dealbata. (Meehan's Month. i. 49, 50, Pl. iv).

Nova Scotia Fungi. J. Somers. (Proc. and Trans. Nova Scotia Inst. Nat. Sci. vii. 464-466).

Notes on sixteen species.

Peach Blight. E. F. Smith. (Journ. Mycol. vii. 36–38, Pl. v., vi).

Illustrated description of *Monilia fructigena.*

Pinguicula grandiflora. (Gard. xl. fig. 44).

Reciprocal Influence of Stock and Scion. Gustav Eisen. (Zoë, ii. 80-111).

Silva of North America. Vol. II., Cyrillaceæ–Sapindaceæ. Charles Sprague Sargent (4to, pp. 117, Plates *LI-XCVII,* 1891).

The second volume of Professor Sargent's great work, issued during the summer, contains descriptions and illustrations of the following species: *Cyrilla racemiflora; Cliftonia monophylla; Evonymus atropurpureus; Gyminda Grisebachii; Schæfferia frutescens; Reynosia latifolia; Condalia obovata; Rhamnidium ferreum; Rhamnus crocea; R. Caroliniana; R. Purshiana; Ceanothus thyrsiflorus; C. velutinus, var. arboreus; Colubrina reclinata; Æsculus glabra; Æsculus octandra; Æ. Californica; Ungnadia speciosa; Sapindus Saponaria; S. marginatus; Exothea paniculata; Hypelate trifoliata; Acer spicatum; A. Pennsylvanicum; A. macrophyllum; A. circinatum; A. glabrum; A. barbatum; A. saccharinum; A. rubrum* and *A. Negundo.*

Spartina—A Neglected. Geo. Vasey. (Bot. Gaz. xvi. 292).

A note on *Spartina junciformis* and the species with which it has been confused.

Sweet Potato Black Rot. B. D. Halsted and D. G. Fairchild, (Journ. Mycol. vii. 1-11, Pl. i.-iii).

Illustrated description of *Ceratocystis fimbriata.*

Structure and Dimorphism of Hypocrea tuberiformis—On the. Geo. F. Atkinson. (Bot. Gaz. xvi. 282-285, Pl. xxv).

Proceedings of the Club.

The regular meeting was held on Tuesday evening, October 14th, the President in the chair, and twenty-six persons present.

Dr. Rusby, chairman of the Instruction Committee, read an exhaustive report of the season's work. In all, fifty-two students were enrolled, and the work accomplished was most satisfactory.

Many reports were given by the members of their observations during the summer. The supposed biennial blooming of *Habenaria ciliaris* was again discussed, but the question could not be decided from the observations made.

Dr. Morong reported that he and Mr. Rudkin had been investigating the fresh water flowering plants, and that a list of forty-seven species had been noted.

Dr. Rusby exhibited an apple, one side of which showed all the markings of the Tompkins King and the other those of a twenty-ounce apple.

Dr. Britton exhibited from Montana a cactus hitherto unknown to that region, and apparently an undescribed species, probably allied to a prairie species of *Mamillaria.* The spines are slender, flexible and minutely barbed. For the plant, Dr. Britton suggests the name of *Mamillaria Notesleini* in honor of the discoverer.

The second October meeting was held on the 29th, the President in the chair, and thirty-four persons present.

The following were elected active members: Mr. Arthur Rolle, Mr. John F. Barnhart, Mr. B. Frank Hays. Prof. Geo. F. Atkinson, Prof. B. S. Galloway, Mr. Erwin F. Smith and Prof. Chas. Mohr, as corresponding members.

The paper announced for the evening, "Some Botanical Gardens of the Old World," was given by Dr. N. L. Britton.

Mr. Torrey reported Little Falls, N. J., as a near locality for *Camptosorus rhizophyllus.*